Development of Ice Packs from Rice Flour in Rice Noodle Factory Wastewater for Pharmaceutical Transportation

Pawitporn Poto, Jantarat Siriphasert
Saint Louis School Chachoengsao
Supervisor: Suwatchai Praparn, Pongprom Pornpoermpoon
Email: suwatchaipp@gmail.com

In the process of producing the rice noodles in the factory, there will be wastewater and food waste remaining after production. The starch from wastewater can produce the smell of pollution through bacterial fermentation. The aim of this project is using starch from wastewater to prepare ice packs for pharmaceutical transportation. The starch was separated from rice noodle factory wastewater by using solid sedimentation for 24 h, the starch was dried and grounded to the powder. The development of ice packs was studied by using starch powder and saline with various ratios and heating the mixture, filled in plastic bags and frozen to form the solid ice packs. The remaining temperature was studied by keeping ice packs at room temperature and measuring ice pack temperature every 30 min. The results show that ice packs with a ratio of 5% starch in 2% saline can keep the temperature below 5 ^{o}C for 180 min, which is a good property to keep a constant temperature. The pharmaceutical containers were simulated by keeping starch ice packs in a styrofoam ice box. The result showed the starch ice packs have the ability to maintain a temperature in the range of 1-5 ^{o}C for 12 h, which is similar to ice packs on the market. Therefore, ice packs from starch in wastewater can be applied used for pharmaceutical transportation usage and used as a prototype of ice packs from waste starch to develop for more effective usage in the commercial market.

Keywords: Cooling Pack, Flour From Wastewater, Ability for Keep Temperature, Pharmaceutical Transportation